

Name \_\_\_\_\_

Student ID Number 930772

University of Saskatchewan  
Department of Computer Science

CMPT 111.5 – Section 05 – Fraser  
Midterm Examination  
Nov 2, 2000

---

Answer all questions in the spaces provided on this exam paper. If you don't have enough space, write on the back of the page - clearly indicate that your answer is continued there. Be sure to pace yourself according to the marks allotted to each question.

---

This midterm exam is open book.  
You may refer to your notes, any computer printouts, and your textbook. Computers and calculators are NOT permitted.

---

If you don't know the exact answer to a question, write as much you can.  
Partial marks will be given.

---

Good Luck!

---

Section 01 03 05 Name: \_\_\_\_\_  
(please circle your section)

Student Number: 245505

University of Saskatchewan  
Department of Computer Science  
CMPT 111.3 all sections Midterm Examination Open Book / Open Mind  
November 4th, 2004

Total Marks: 100

Time: 90 minutes

Answer questions 1-20 on the opt-scan sheet, all other questions in the spaces provided in this exam paper. If you don't have enough space, write on the back of the page, indicating clearly that your answer is continued there. Be sure to pace yourself according to the marks allotted to each question.

Part 1 (true/false, two marks each) put your responses on the opt-scan sheet

- 1 A (false) B (true) The following code assigns 10.5 to z.  
`int x = 21;  
int y = 2;  
double z = 21 / 2;`
- 2 A (false) B (true) Java byte-code (the class file) must be recompiled when moved to a different machine.
- 3 A (false) B (true) Any for-loop could be re-written as a while-loop.
- 4 A (false) B (true) String is **NOT** a primitive data type in Java.
- 5 A (false) B (true) The index of the first element in an array in Java is 1.
- 6 A (false) B (true) To compile the java program Midterm.java the command `javac Midterm.java` should be used.
- 7 A (false) B (true) `for (int i=0; i<5; i++)  
 System.out.println("hello");  
 System.out.println(i);`  
The above code will result in a compiler error.
- 8 A (false) B (true) `int count=0;  
while(count<2)  
{  
 count++;  
}  
System.out.println(count);`  
The value printed to the screen is 2.
- 9 A (false) B (true) A java class can only have one constructor.
- 10 A (false) B (true) To execute the java program Midterm the command `java Midterm.java` should be used.

8/ → 16

10/ → 30 + 43

**Part 2 (Multiple choice, three marks each) put your responses on the opt-scan sheet**

11 Which of the following is a legal variable name in Java?

- A Goforit!
- B 5timestables
- ☒ C hic\_cup
- D sea&sky
- E Void

12 Consider the following program fragment, and the options for a possible next line of the program. Which of the options is **NOT** a legal condition?

```
int i = 6;  
boolean b = true;  
String s = "89";
```

- A if (b)
- ☒ B if (s > i)
- C if (b == true)
- D if (s.equals("w"))
- E if (i == 6)

13 Which of the following is a primitive data type in Java?

- A void
- B String
- ☒ C double
- D new
- E Class

14 The following is **NOT** a logical operator in Java:

- A !
- B ||
- ☒ C &&
- D >
- E Actually, all of the above are logical operators.

15 We want the value "plusplus" to be stored in the brand-new variable s. Which of the following will accomplish this?

- A int s = "plusplus";
- B String s = "plus" "plus";
- C String s += "plus";
- ☒ D String s = new String("plusplus");
- E String s = String.concat("plus");

- 16 Consider the following program fragment.  
Select the answer that best matches the output.

```
int i = 9;  
for (i = 0; i < 3; i++)  
    System.out.print("*");  
System.out.println("");
```

A \*  
B \*\*  
C \*\*\*  
D \*\*\*\*  
E No output

- 17 Consider the following program fragments.  
Select the answer that best matches the output.

```
int a = 1, b = 2;  
if ((a > b) || (b > a))  
    a += b;  
else  
    a -= b;  
System.out.println(a);
```

A -1  
B 0  
C 1  
D 2  
E 3

- 18 Consider the following program fragment.  
Select the answer that best matches the output.

```
int[] mya = new int[6];  
for (int i = 0; i != mya.length; i++)  
    mya[i] = i*5;  
System.out.println(mya[5]);
```

A 0  
B 5  
C 6  
D 25  
E The code will generate an error.

- 19 Consider the following method:

```
public int question(int a, int b)
{
    int c = a - b;
    if (b > c)
        return a;
    else
        return c;
}
```

What will be the returned value if we make the call `question(3,1)`;

- ✓
- |          |    |
|----------|----|
| A        | -2 |
| B        | 0  |
| C        | 1  |
| <u>D</u> | 2  |
| E        | 3  |

- 20 Consider the following program fragment.  
Select the answer that best matches the output.

```
int a = 8, b = 5;
int c = b % a;
System.out.println(c);
```

- ✓
- |          |    |
|----------|----|
| A        | 0  |
| <u>B</u> | 5  |
| C        | 8  |
| D        | 13 |
| E        | 40 |

**Part 3 (Open questions) put your responses in the spaces provided on this paper**

**Question 21: (10 marks)**

Given the driver class UseWallet, write the code for the class Wallet (on the next page). The wallet class should include a constructor, a subtractAmount method and a getAmount method. You may assume that all amounts are in whole dollars (no cents will be used).

Your subtractAmount method should return the amount of money that was subtracted, keeping in mind that the amount of money in the wallet should never be negative. So, if the amount of money being subtracted is more than the amount in the wallet then the subtractAmount method should not subtract any money.

Pseudocode for subtractAmount:

if amount to subtract is less than or equal to amount in wallet  
    subtract the money from the wallet, return the amount subtracted  
otherwise return zero

Remember to use the correct visibility modifiers.

You do not need to comment your code for this question.

```
// This class is the driver class for MyWallet
// It creates a wallet and then performs some
// method calls on it.
public class UseWallet
{
    public static void main(String[] args)
    {
        int originalAmount = 100;
        int subtractAmount = 70;
        int returnedValue;

        Wallet myWallet = new Wallet(originalAmount);
        System.out.println("Original Amount: "+myWallet.getAmount() );

        returnedValue = myWallet.subtractMoney(subtractAmount);
        if(returnedValue == subtractAmount)
            System.out.println("New Amount: "+myWallet.getAmount() );
        else
            System.out.println("Not enough money left");
    }
}
```

```

public class Wallet
{
    // Write your code here
    private int TotalAmount;
    public void Wallet (int Amt)
    {
        TotalAmount = Amt;
    }

    public int subtract SubtractMoney (int Value)
    {
        if (Value > TotalAmount)
            return TotalAmount;
        else
        {
            TotalAmount = TotalAmount - Value;
            return TotalAmount;
        }
    }

    public int getAmount()
    {
        return TotalAmount;
    }
}

```

9

**Question 22: (10 marks)**

Beside each `System.out.println` statement write the program's output.  
You should write the output after the comment symbol (`//`).

```
public class StringTest
{
    public static void main(String[] args)
    {
        String s1 = new String("Midterm Test");
        String s2 = s1.toLowerCase();
        String s3 = s1.toUpperCase();
        String s4 = s1.substring(6);
        String s5 = s1.substring(5, 9);
        String s6 = s1 + s1;
        String s7 = s1;
        s7 += " Today";
        boolean s8 = s1.equals("MIDTERM TEST");
        int s9 = s1.indexOf("t");
        int s10 = s1.length();

        System.out.println(s1); // Midterm Test ✓
        System.out.println(s2); // midterm test ✓
        System.out.println(s3); // MIDTERM TEST ✓
        System.out.println(s4); // m Test ✓
        System.out.println(s5); // rm T ✓
        System.out.println(s6); // Midterm Testmidterm Test ✓
        System.out.println(s7); // Midterm Test Today ✓
        System.out.println(s8); // false ✓
        System.out.println(s9); // 3 ✓
        System.out.println(s10); // 12 ✓
    }
}
```

9



### Question 23: (5 marks)

Circle five syntax errors in the following code that cause the program to not compile.  
You may assume the code is contained in a file called MyClass.java

```
import java.io.*;

public class MyClass
{
    public static void main(String[] args) throws Exception
    {
        BufferedReader kb = new BufferedReader(new
        InputStreamReader(System.out)); ✓

        System.out.print("Please enter some text:"); ✓

        String input = kb.readLine;
        if(input.equals("Special")) ✓
        {
            System.out.println("You entered some special text");
        }
        else
        {
            System.out.println("The text you entered was: "+input5!!!"); ✓
        }
    }
}
```

### Question 24: (5 marks)

Given the code:

```
int x=9;
int y=8;
boolean s=true;
BogusClass bc=new BogusClass("bogus", "class");
String value=bc.doSomethingWith(s,y,x);
```

What would the header of the method doSomethingWith look like? (4 marks)

*public String doSomethingWith(boolean a, int b, int c)*

What is the name of the class in which the doSomethingWith method is defined? (1 mark)

*BogusClass*

**Question 25 (5 marks)**

What is the output of the following code?

(Hint trace the values of all the variables)

```
int y=26;
int x=3;
int d=0;
for (int i=0; i<y/4; i=i+3)
{
    int u=y/x;
    d=d+x+u;
    x=u;
}
System.out.println("x=" + x + " d="+d);
```

$x=3$   $d=22$  ✓ 5

**Question 26: (5 marks)**

Given the method

```
public int returnMagicNumber(int[] a)
{
    int x=a[0];
    for (int i=1; i<a.length; i++)
        if (a[i]>x)
            x=a[i];
    return x;
}
```

What would the the following code have as output? (5 marks total)

```
int[] y={13,2,6,7,19,4,6};
System.out.println(returnMagicNumber(y));
```

6 7 19

```
int[] z={5,4,22,-7,60,69,1,0};
System.out.println(returnMagicNumber(z));
```

5 69

**Question 27:(5 marks)**

The code below is supposed to determine the minimum amount of quarters(25 cent coins), dimes (10 cent coins), nickels (5 cent coins) and pennies (1 cent coins) that are needed to pay the amount represented by the variable money (in dollars). You can use all the blanks, but you don't have to.

double money=1.67;

int total= 3

int quarters= money / 0.25

int dimes= (money - (quarters \* 0.25)) / 0.1

int nickels= (money - (quarters \* 0.25) - (dimes \* 0.1)) / 0.05

int pennies= (money - (quarters \* 0.25) - (dimes \* 0.1) - (nickels \* 0.05)) / 0.01  
ugly, but ok

5

**Question 28: (5 marks)**

Given the 2 classes below, what is the output of executing the Drawing program?

```
class Crayon
{
    private String colour;

    public Crayon();
    {
        colour=new String();
    }
    public void setColour(String c);
    {
        colour=c;
    }
    public String getColour()
    {
        return colour;
    }
}

class Drawing
{
    public static void main(String[] a)
    {
        Crayon c=new Crayon();
        Crayon d=new Crayon();
        Crayon e=new Crayon();
        e.setColour("blue");
        d.setColour("yellow");
        c.setColour("red");
        System.out.println(c.getColour()); // output 1
        System.out.println(d.getColour()); // output 2
        System.out.println(e.getColour()); // output 3
        d.setColour(c.getColour());
        e.setColour(d.getColour());
        System.out.println(d.getColour()); // output 4
        System.out.println(e.getColour()); // output 5
    }
}
```

Answers:

output 1 red

output 2 yellow

output 3 blue

output 4 red

output 5 red

✓

✓

✓

✓

✓

5

\*\*\*\*\* THE END \*\*\*\*\*